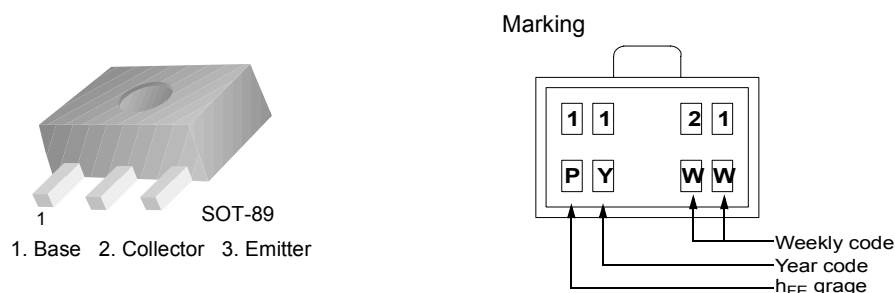


# KSB1121

## PNP Epitaxial Planar Silicon Transistor

### High Current Driver Applications

- Low Collector-Emitter Saturation Voltage
- Large Current Capacity
- Fast Switching Speed
- Complement to KSD1621



### Absolute Maximum Ratings T<sub>a</sub> = 25°C unless otherwise noted

| Symbol           | Parameter                   | Ratings   | Units |
|------------------|-----------------------------|-----------|-------|
| V <sub>CBO</sub> | Collector-Base Voltage      | -30       | V     |
| V <sub>CEO</sub> | Collector-Emitter Voltage   | -25       | V     |
| V <sub>EBO</sub> | Emitter-Base Voltage        | -6        | V     |
| I <sub>C</sub>   | Collector Current           | -2        | A     |
| P <sub>C</sub>   | Collector Power Dissipation | 500       | mW    |
| P <sub>C</sub> * |                             | 1.3       | W     |
| T <sub>J</sub>   | Junction Temperature        | 150       | °C    |
| T <sub>STG</sub> | Storage Temperature         | -55 ~ 150 | °C    |

\* Mounted on Ceramic Board (250mm<sup>2</sup> x 0.8mm)

### Electrical Characteristics T<sub>a</sub> = 25°C unless otherwise noted

| Symbol                | Parameter                            | Test Condition                                 | Min. | Typ.  | Max. | Units |
|-----------------------|--------------------------------------|------------------------------------------------|------|-------|------|-------|
| BV <sub>CBO</sub>     | Collector-Base Breakdown Voltage     | I <sub>C</sub> = -10μA, I <sub>E</sub> = 0     | -30  |       |      | V     |
| BV <sub>CEO</sub>     | Collector-Emitter Breakdown Voltage  | I <sub>C</sub> = -1mA, I <sub>B</sub> = 0      | -25  |       |      | V     |
| BV <sub>EBO</sub>     | Emitter-Base Breakdown Voltage       | I <sub>E</sub> = -10μA, I <sub>C</sub> = 0     | -6   |       |      | V     |
| I <sub>CBO</sub>      | Collector Cut-off Current            | V <sub>CB</sub> = -20V, I <sub>E</sub> = 0     |      |       | -100 | nA    |
| I <sub>EBO</sub>      | Emitter Cut-off Current              | V <sub>BE</sub> = -4V, I <sub>C</sub> = 0      |      |       | -100 | nA    |
| h <sub>FE1</sub>      | DC Current Gain                      | V <sub>CE</sub> = -2V, I <sub>C</sub> = -0.1A  | 100  |       | 560  |       |
| h <sub>FE2</sub>      |                                      | V <sub>CE</sub> = -2V, I <sub>C</sub> = -1.5A  | 65   |       |      |       |
| V <sub>CE</sub> (sat) | Collector-Emitter Saturation Voltage | I <sub>C</sub> = -1.5A, I <sub>B</sub> = -75mA |      | -0.35 | -0.6 | V     |
| V <sub>BE</sub> (sat) | Base-Emitter Saturation Voltage      | I <sub>C</sub> = -1.5A, I <sub>B</sub> = -75mA |      | -0.85 | -1.2 | V     |

**Electrical Characteristics** (Continued)  $T_a = 25^\circ\text{C}$  unless otherwise noted

| Symbol    | Parameter                      | Test Condition                                                                                                            | Min. | Typ. | Max. | Units |
|-----------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------|------|------|------|-------|
| $f_T$     | Current Gain Bandwidth Product | $V_{CE} = -10\text{V}, I_C = -50\text{mA}$                                                                                |      | 150  |      | MHz   |
| $C_{ob}$  | Output Capacitance             | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$                                                                          |      | 32   |      | pF    |
| $t_{ON}$  | Turn On Time *                 | $V_{CC} = -12\text{V}, V_{BE} = -5\text{V}$<br>$I_{B1} = -I_{B2} = -25\text{mA}$<br>$I_C = -500\text{mA}, R_L = 24\Omega$ |      | 60   |      | ns    |
| $t_{STG}$ | Storage Time *                 |                                                                                                                           |      | 350  |      | ns    |
| $t_F$     | Fall time *                    |                                                                                                                           |      | 25   |      | ns    |

 **$h_{FE}$  Classification**

| Classification | R         | S         | T         | U         |
|----------------|-----------|-----------|-----------|-----------|
| $h_{FE1}$      | 100 ~ 200 | 140 ~ 280 | 200 ~ 400 | 280 ~ 560 |

**Package Marking and Ordering Information**

| Device Marking | Device  | Package | Reel Size | Tape Width | Quantity |
|----------------|---------|---------|-----------|------------|----------|
| 1121           | KSB1121 | SOT-89  | 13"       | --         | 4,000    |

## Typical Performance Characteristics

Figure 1. Static Characteristic

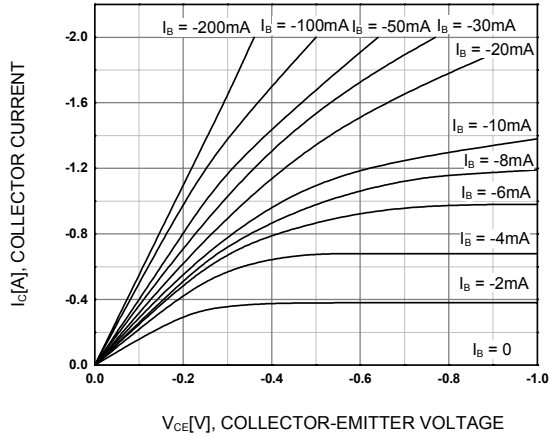


Figure 2. DC Current Gain

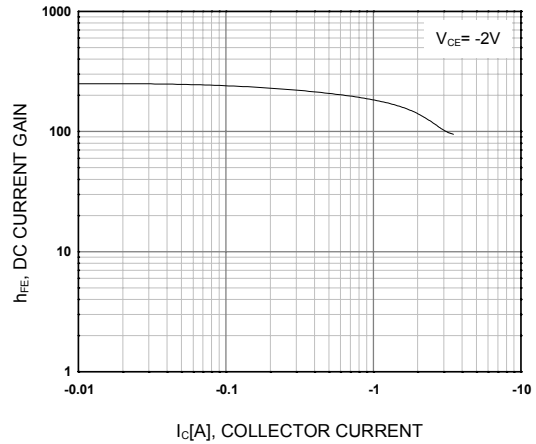


Figure 3. Collector-Emitter Saturation Voltage

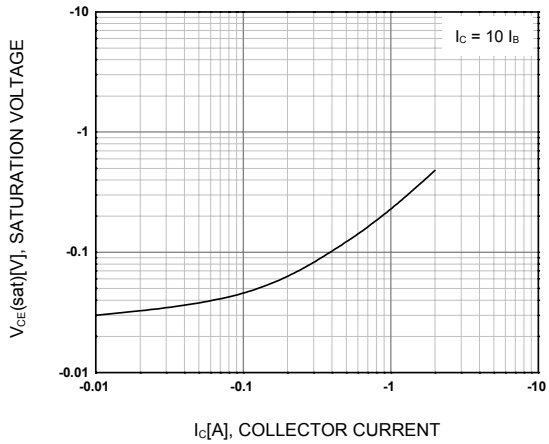


Figure 4. Base-Emitter On Voltage

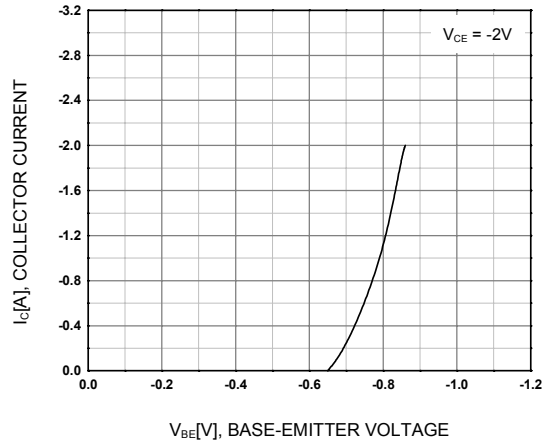


Figure 5. Collector Output Capacitance

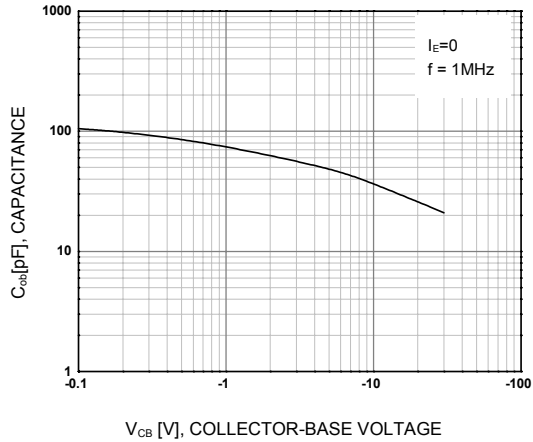
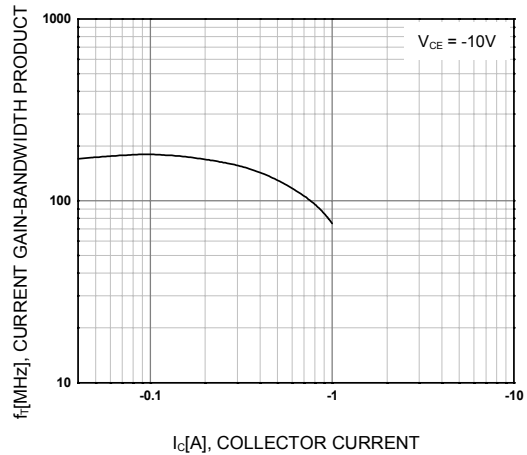
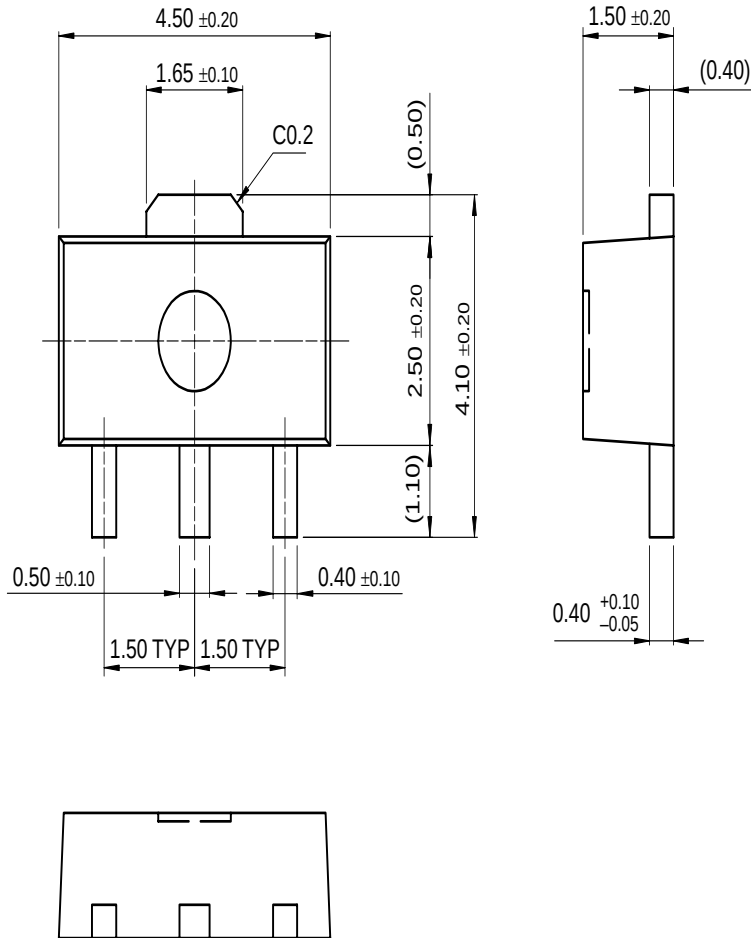


Figure 6. Current Gain Bandwidth Product



# Mechanical Dimensions

## SOT-89



Dimensions in Millimeters

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| ActiveArray <sup>™</sup>                         | FAST <sup>™</sup>               | LittleFET <sup>™</sup>    | PowerTrench <sup>®</sup>        | SyncFET <sup>™</sup>        |
| Bottomless <sup>™</sup>                          | FPS <sup>™</sup>                | MICROCOUPLER <sup>™</sup> | QFET <sup>®</sup>               | TinyLogic <sup>®</sup>      |
| Build it Now <sup>™</sup>                        | FRFET <sup>™</sup>              | MicroFET <sup>™</sup>     | QS <sup>™</sup>                 | TINYOPTO <sup>™</sup>       |
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| EnSigna <sup>™</sup>                             | ImpliedDisconnect <sup>™</sup>  | OCXPro <sup>™</sup>       | SILENT SWITCHER <sup>®</sup>    | Wire <sup>™</sup>           |
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|                                                  |                                 | PowerEdge <sup>™</sup>    | SuperSOT <sup>™</sup> -6        |                             |

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|--------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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